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Pompili, Maurizio; Masocco, Maria; Vichi, Monica; Lester, David; Innamorati, Marco; Tatarelli, Roberto; Vanacore, Nicola

Eur Child Adolesc Psychiatry (2009) 18:525–533
DOI 10.1007/s00787-009-0007-x

ORIGINAL CONTRIBUTION

Suicide among Italian adolescents: 1970–2002

Maurizio Pompili · Maria Masocco · Monica Vichi · David Lester · Marco Innamorati · Roberto Tatarelli · Nicola Vanacore

Received: 16 July 2008 / Accepted: 13 February 2009 / Published online: 17 March 2009

Abstract The purpose of the present study was to analyze sex and regional differences in the suicide rate of adolescents and the methods they used for suicide in Italy during the period 1970–2002. Temporal trends and regional variations in suicide for Italian adolescents were retrieved from the Italian database on mortality for the period 1970–2002, collected by the Italian Census Bureau and processed by the Italian National Institute of Health-Statistics Unit. In the period 1970–2002, 3,069 adolescent suicides were monitored in Italy. Analyses of these suicides identified significant differences by region of residence and sex. Males were 2.1 times more likely than females to kill themselves. Male and female suicides had inverse trends in the years analyzed, so that the sex difference at the present time is the result of a continuous increase in male suicides and a decrease in female suicides since 1970. The dramatic peaks observed over the time period studied cannot be attributed to a single cause, indicating that further studies are needed to better understand the phenomenon.

Keywords Suicide · Adolescents · Italy

M. Pompili (✉) · R. Tatarelli
Department of Psychiatry, Sant'Andrea Hospital, Sapienza University of Rome, 1035 Via di Grottarossa, 00189 Rome, Italy
e-mail: maurizio.pompili@uniroma1.it;
mpompili@mclean.harvard.edu

M. Pompili
McLean Hospital, Harvard Medical School, Belmont, MA, USA

M. Masocco · M. Vichi · N. Vanacore
National Centre for Epidemiology, Surveillance and Health Promotion (CNESPS), Italian National Institute of Health (ISS), Rome, Italy

D. Lester
The Richard Stockton College of New Jersey, Pomona, NJ, USA

M. Innamorati
Università Europea di Roma, Rome, Italy

Introduction

Adolescence is a time when dramatic biological, cognitive, social, and emotional changes occur. Among the problems that emerge during this period, suicide in young people has become a major source of concern in many countries [7], especially among adolescent boys. Overall, suicide ranks as the third leading cause of death in the 15–24-year-old age group. Although the actual base rate of adolescent suicide is still relatively low, approximately 7.9 per 100,000 per year in the United States [20], it is of great concern that the rates of adolescent suicide have increased significantly over the past four decades [8, 32]. Young males represent one of the most challenging groups to access in order to implement suicide prevention strategies. A greater understanding of the pathways which lead young people to take their lives is important in ensuring that prevention strategies and health service delivery are as effective as possible.

One valuable approach to understanding the dynamics of suicide has been the use of psychological autopsies [14]. Based on interviews of relatives of the deceased and evidence from medical, criminal and social services records, psychological autopsy studies suggest that more than 90% of young suicide deaths are associated with mental health disorders, and high rates of comorbid mental health, addictive and physical disorders [5, 25, 27]. Gould et al. [10] conducted a case-control, psychological autopsy study of 120 youth suicides (101 of which were aged 15–19 years)

specifically designed to examine systematically environmental, social, and family characteristics. They found that psychosocial factors significantly increase the risk of suicide in children and adolescents, independent of any psychiatric disorders present. The overall effect size of psychosocial factors for increasing the risk of suicide in adolescents was found to be comparable to that of diagnostic factors. The most notable psychosocial risks for adolescents were poor communication with the father, a father with a history of trouble with the police, a family history of suicidal behavior, disciplinary crises, recent losses (for males), and school or work problems.

The most recent Italian data are for 2002 when the suicide rate among adolescents aged 15–19 was 2.3 per 100,000 per year (68 suicides: 49 males and 19 females), about sixfold higher than the suicide rate found in those aged 10–14 years who had a suicide rate of 0.39 (11 suicides: 6 males and 5 females). In the last 30 years, the suicide rate among Italian males 15–19 years of age has risen whereas the suicide rate among girls has decreased by half. Recent data suggest that the suicide rate is the third leading cause of death (together with cardiovascular disease), with only car accidents and cancer killing more male and female adolescents.

The picture is different in the USA. Recent data suggest that the suicide rate for 15–19-year-olds (7.9 per 100,000) is six times the rate for 10–14-year-olds [3]. During 2001, 4,382 US youths between the ages of 15 and 24 committed suicide. Suicide remains the third leading cause of death among those aged 10–19 in the United States [3]. According to Peters et al. [21], the suicide rates for youths between the ages of 15 and 19 rose 245% between 1956 and 1994.

The high rates of nonlethal suicide attempts are also disconcerting. Several large general population studies report suicide attempt rates ranging from 7 to 16% among adolescents [1, 15, 18, 24, 28, 31]. These studies show clear gender differences, with approximately 4–10% of boys versus 10–20% of girls reporting a history of suicide attempt. While female adolescents are two to four times more likely to attempt suicide, males are far more likely than their female counterparts to complete suicide [17].

Gould et al. [11] reviewed two plausible explanations for the escalation in adolescent suicides during the 1960s, '70s and '80s: (1) a greater exposure of adolescents to drugs and alcohol, and (2) the increased availability of firearms. Further investigation is needed since there has not been an appreciable decline in drug and alcohol use by adolescents to correspond with the more recent decline in adolescent suicide rates. Additionally, the recent decrease in availability of firearms has not resulted in a corresponding decrease in firearms as a method of adolescent suicide. Regarding the subsequent decline in suicide rates, a plausible explanation is the surge in antidepressants being prescribed for adolescents [9, 11].

Regardless of age, ethnicity, or gender, firearms are the most common and lethal method of suicide in the USA, and this is true also for adolescents [2, 29]. Hanging is the second most common method of suicide in adolescents, followed by overdose for female adolescents and carbon monoxide poisoning for male adolescents [5]. Jumping from a high place is also common in male adolescent suicides, while asphyxiation and carbon monoxide poisoning are also common in female adolescent suicides [5].

There is a body of literature examining the cultural meanings of suicidal behavior that may help explain these gender differences. For example, studies of American college students suggest that nonfatal suicide attempts are viewed as more "feminine" and less potent, and that they are interpreted as a cry for help, a behavior that is more expected of women [19, 30]. Other surveys of college students identified a perception of female suicide as wrong, foolish and weak and less permissible than male suicide. In the United States, cultural scripts of gender and suicidal behavior are likely to influence adolescents' decisions about suicidal behavior [6]. Adolescents are quite sensitive and responsive to cultural messages, even more so than adults, given that they are in the midst of defining their identities. Thus, the influence of "gender-appropriate" suicidal behavior may be significant and requires further evaluation.

In order to explore the characteristics and possible determinants of adolescent suicide in Italy, the purpose of the present study was to analyze sex and regional differences in adolescence suicide and methods in Italy during the period 1970–2002.

Methods

Study population

The present paper explores temporal trends from 1970 and regional variations in suicide mortality for Italian adolescents (15–19-year-olds). The data were extracted from the Italian Mortality Database, which is collected by the Italian National Census Bureau (ISTAT) and processed by the Statistics Unit of National Centre for Epidemiology, Surveillance and Health Promotion (CNESPS) at the National Institute of Health (Istituto Superiore di Sanità). ISTAT gathers all death certificates of Italian citizens who die in Italy and codes the cause of death according to the ICD-9 revision. Deaths from suicide are coded under External Causes, labeled E950–E959.

Variables

For each 3-year-period from 1970–1972 to 2000–2002 (2002 is the last year with available data) male and female suicide rates were calculated for Italy and for the major regions of residence (north, central and south/islands). The rates calculated for each 3-year-period represent the mean annual number of suicides per 100,000 inhabitants.

Statistical analysis

To analyze sex-related differences in incidence of suicide for the period 1972–2002, relative risks (RR) were estimated with their 95% confidence interval (95% CI) via Poisson regression with robust error variance and Newton-Raphson's maximum likelihood optimization technique [33]; RR scores higher than 1 indicates a higher risk for male adolescents compared to female. Two 3-year periods (1970–1972, and 2000–2002) were also examined for the methods used for suicide. To evaluate methods of suicide we collapsed categories into a dichotomous variable: violent methods (hanging, jumping, shooting or stabbing, drowning and burning) and nonviolent methods (poisoning and gassing). Chi-squared test (χ^2), one-way Fisher's exact tests (1-fet) and McNemar's tests were used for bivariate analysis. All the analyses were performed with commercial statistical packages (STATA 9.0, SPSS 13.0).

To analyze trends in suicide rates, we used loglinear joinpoint regression models. Joinpoint regression analysis identifies points where a statistically significant change over time in the linear slope of the trend occurred [16]. We used a grid search method to fit the regression function with unknown joinpoints assuming constant variance and uncorrelated errors. Then, we set the minimum/maximum number of joinpoints to 0–3 and tested how many joinpoints were statistically significant and should be added to the model. Permutation tests were used to select the best model. In the final model, each joinpoint indicates a statistically significant change in trend. To represent change in trends we reported the annual percentage change (APC). Joinpoint analyses were performed using the Joinpoint Regression Program, version 3.3, from the US National Cancer Institute.

Results

Sex differences in suicide rates: 1970–2002

In the period 1970–2002, 3,069 adolescent suicides were monitored in Italy (average suicide rates: 2.35 ± 0.40 per 100,000 adolescents). There were significant differences in the adolescent suicide rate for the three Italian regions: 2.63 ± 0.60 versus 2.07 ± 0.35 versus 2.19 ± 0.40, respectively, for the North, Central, and South ($\chi^2 = 26.47$, $df = 2$, $P < 0.001$; see Table 1b).

The suicide rates among adolescents were also different for males and females (see Table 1a). More male adolescents killed themselves than females (males were almost 2.1 times as likely as females to kill themselves; $z = 4.75$, $P < 0.001$). The same differences were evident in each Italian region (north: RR = 1.59 [1.24/2.04]; $z = 3.65$, $P < 0.001$) (central: RR = 2.10 [1.46/3.00]; $z = 4.03$, $P < 0.001$) (south: RR = 1.95 [1.35/2.81]; $z = 3.54$, $P < 0.001$).

Joinpoint analysis of temporal trends

Figures 1, 2 and 3 display suicide trends for years 1970–2002, broken down by sex and region of residence. Over the three decades, suicide in male adolescents increased by 20%, changing from 2.8 per 100,000 in the years 1970–1972 to 3.4 in the years 2000–2002, with an average annual percent change (AAPC) of 1.9% ($P < 0.05$) (see Table 2). In contrast, there was a decrease in suicide among girls, changing from 2.4 per 100,000 in the years 1970–1972 to 1.3 in the years 2000–2002, with an AAPC of -1.7% ($P < 0.05$). Increased male suicide rates were evident in all regions, with an AAPC between 1.6 and 2.3%. However, the decrease in female suicide was stronger in the south (AAPC $= -2.6\%$; $P < 0.05$) than in the other regions. Thus, the sex difference observable at the present time is the result of a continuous increase in male suicides and a decrease in female suicides since 1970.

Joinpoint analysis revealed that adolescent male suicides increased continuously during the 1970s and most of the 1980s and then decreased in late 1990s, both in Italy (1997–2002: APC $= -7.9\%$; $P < 0.05$) and in the northern and southern regions (north 1996–2002: APC $= -8.4\%$; south 1998–2002: APC $= -9.4\%$; $P > 0.05$) (see Table 2), while in central Italy there was a continuous, moderate increase during the entire period (1970–2002: APC $= 1.8\%$; $P < 0.05$). Female suicide trends were opposite to those of males in all of Italy except in the central regions. Adolescent female suicides decreased continuously during the 1970s and the early years of the 1980s (Italy 1970–1985: APC $= -5.7\%$; $P < 0.05$; north 1970–1981: APC $= -7.8\%$; $P < 0.05$; south 1970–1985: APC $= -6.4\%$; $P < 0.05$) and then increased in the late 1980s and 1990s (Italy 1986–2002: APC $= 2.6\%$; $P < 0.05$; north 1982–2002: APC $= 2.3\%$; $P > 0.05$; south 1986–2002: APC $= 1.4\%$; $P > 0.05$).

Analyzing suicide trends by region, we see that in the central regions there was a moderate but continuous

Table 1 Suicide: number of deaths and mortality rates by geographical area of residence and gender (per 100,000 inhabitants aged 15–19 years) Italy 1970–2002

(a)

	Italy				Northern Italy				Central Italy				Southern Italy			
	Men		Female		Men		Female		Men		Female		Men		Female	
	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate
1970–1972	168	2.8	136	2.4	70	2.9	59	2.5	26	2.5	11	1.1	72	2.9	66	2.8
1973–1975	143	2.3	99	1.7	64	2.5	40	1.6	24	2.2	10	1.0	55	2.2	49	2.0
1976–1978	171	2.6	93	1.5	80	3.0	40	1.5	21	1.8	17	1.5	70	2.6	36	1.4
1979–1981	207	3.0	93	1.4	110	3.7	31	1.1	36	2.9	12	1.0	61	2.2	50	1.9
1982–1984	191	2.7	75	1.1	95	3.1	31	1.1	41	3.2	11	0.9	55	1.9	33	1.2
1985–1987	207	3.0	58	0.9	96	3.3	25	0.9	39	3.2	7	0.6	72	2.6	26	1.0
1988–1990	215	3.2	75	1.2	95	3.4	32	1.2	38	3.1	11	1.0	82	3.0	32	1.2
1991–1993	235	3.7	74	1.2	106	4.2	38	1.6	39	3.5	10	0.9	90	3.4	26	1.0
1994–1996	264	4.8	68	1.3	135	6.3	35	1.7	34	3.5	7	0.8	95	3.9	26	1.1
1997–1999	215	4.3	68	1.4	88	4.8	23	1.3	35	4.1	14	1.7	92	4.1	31	1.4
2000–2002	157	3.4	57	1.3	71	4.1	22	1.4	27	3.4	9	1.2	59	2.8	26	1.3
N (M ± SD)	2,173	3.25 ± 0.75	896	1.4 ± 0.39	1,010	3.75 ± 1.07	376	1.45 ± 0.43	360	3.04 ± 0.65	119	1.06 ± 0.31	803	2.87 ± 0.70	401	1.48 ± 0.55
RR (95% CI)	2.11 (1.55/2.88)				1.59 (1.24/2.04)				2.10 (1.46/3.00)				1.95 (1.35/2.81)			

(b)

	Italy		Northern Italy		Central Italy		Southern Italy	
	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate
1970–1972	304	2.6	129	2.7	37	1.8	138	2.9
1973–1975	242	2.0	104	2.1	34	1.6	104	2.1
1976–1978	264	2.1	120	2.3	38	1.7	106	2.0
1979–1981	300	2.2	141	2.4	48	2.0	111	2.0
1982–1984	266	1.9	126	2.1	52	2.1	88	1.6
1985–1987	265	1.9	121	2.1	46	1.9	98	1.8
1988–1990	290	2.2	127	2.3	49	2.1	114	2.1
1991–1993	309	2.5	144	2.9	49	2.2	116	2.2
1994–1996	332	3.1	170	4.1	41	2.2	121	2.5
1997–1999	283	2.9	111	3.1	49	2.9	123	2.8
2000–2002	214	2.4	93	2.8	36	2.3	85	2.1
N (M ± SD)	3,069	2.35 ± 0.40	1,386	2.63 ± 0.60	479	2.07 ± 0.35	1,204	2.19 ± 0.40

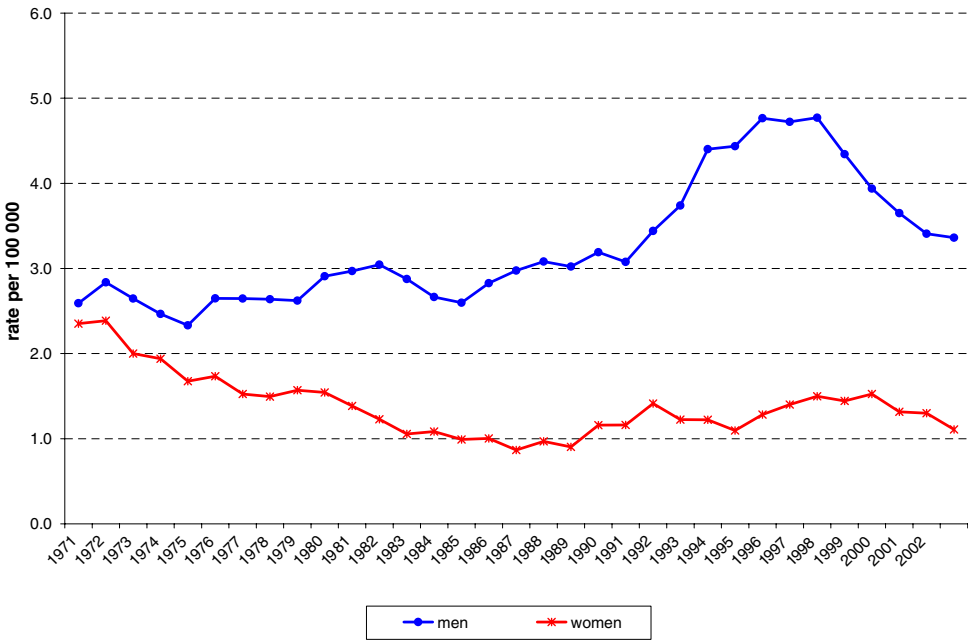

Fig. 1 Suicide rate. Men and women aged 15–19 years. Italy 1970–2002

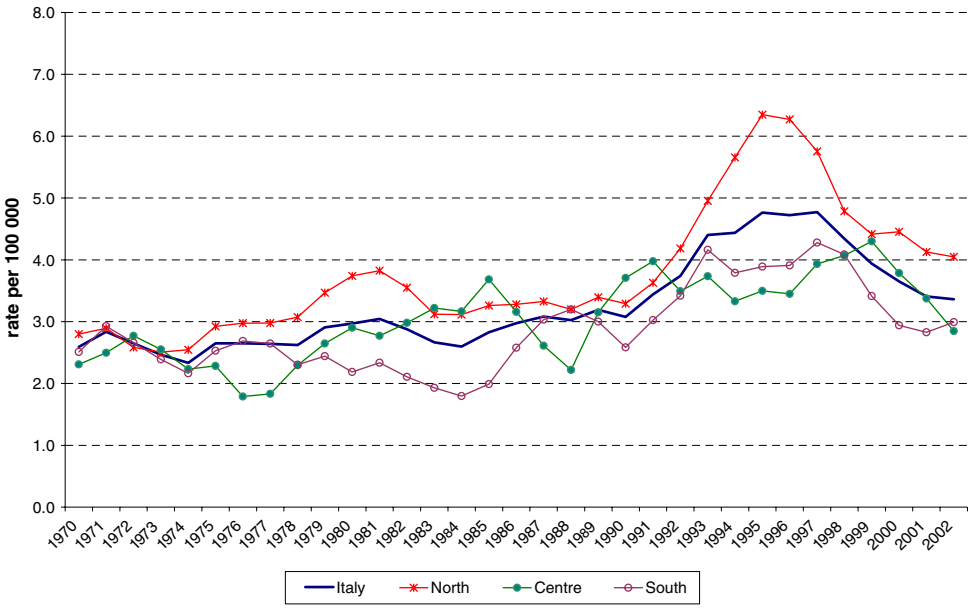

Fig. 2 Suicide rate. Men aged 15–19 years. Italy, northern, central, and southern by geographical area of residence 1970–2002

increase during the entire period (1970–2002: APC = 1.5%; $P < 0.05$), while in the north and south there were some discontinuities in the suicide trends. In the north, there were two periods of decline (1970–1989: APC = −0.9%; $P > 0.05$; 1996–2002: APC = −7.4%; $P < 0.05$), between which there was a great increase in the suicide rate (1990–1995: APC = 12.2%; $P < 0.05$). In the south, there were two periods of decline (1970–1984: APC = −3.8%; $P < 0.05$; 1998–2002: APC = −7.2%; $P > 0.05$), between which there was an increase in suicide rates (1985–1997: APC = 4.6%; $P < 0.05$).

Methods of suicide: sex differences

We examined methods of suicides in two periods, the first three years (1970–1972), and the last three years (2000–2002) of the years analyzed (see Table 3). In the years 2000–2002, almost half of the male suicides were caused by hanging (48%), followed by firearms (20%) and jumping from a height (18%). In the earlier period, some male adolescents used poisoning with drugs or other substances (11%), but the data for recent years do not indicate any cases of poisoning. When analyzing violent methods of suicide, male suicides used violent methods more in

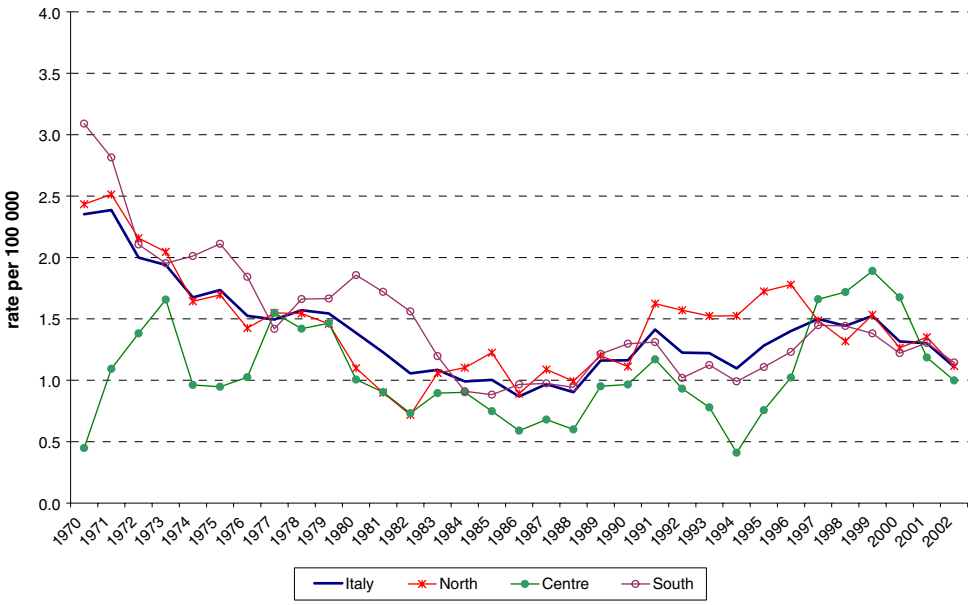

Fig. 3 Suicide rate. Women aged 15–19 years. Italy, northern, central, and southern areas of residence 1970–2002

2000–2002 than in 1970–1972 (95.5 vs. 87.5%; McNemar test: $\chi^2 = 125.26$ [$N = 325$], $P < 0.001$).

Among female adolescents, about half of the suicides (49%) were by jumping from a height, 26% by hanging and 14% by firearms. Although drowning was used in the earlier period (11% of the suicides), the data for the recent period indicate no cases of drowning for females. In addition, overdosing using medications has declined in popularity. When analyzing violent methods of suicide, female suicides used violent methods more in 2000–2002 than in 1970–1972 (96.5 vs. 58.1%; McNemar test: $\chi^2 = 71.31$ [$N = 193$], $P < 0.001$). Thus, sex differences in violent methods of suicide were significant only in the earlier period (1-fet: $P < 0.001$; RR = 2.09), and not in 2000–2002 (1-fet: $P < 0.55$).

Discussion

The aim of the present study was to characterize the trends in the suicide rates of adolescents aged 15–19 years over a 30-year period in Italy. This epidemiological investigation demonstrated that there are regional differences in the trends in adolescent suicide rates by sex. The higher adolescent suicide rate observed in Northern Italy matches the difference in the overall suicide rate (for all ages) in the north and may be a result of the higher consumption of alcohol in the north.

Looking at the method for suicide, the decline in suicide by overdosing with medications may be related to the introduction of less toxic antidepressant medication such as the selective serotonin reuptake inhibitors (although some authors have indicated that the use of antidepressant drugs in pediatric patients is associated with a modestly increased risk of suicidality [12]). The use of more lethal suicide methods by girls in recent years may be a product of changes in cultural patterns that allow girls and women in general to hold similar roles in contemporary Italy as their male counterparts.

The dramatic peaks in the adolescent suicide rate observed over the time period studied cannot be attributed to a single cause, suggesting that further studies are needed to understand better the phenomenon of adolescent suicide. Our study has demonstrated that suicide in adolescents is not a stable phenomenon in boys or girls, highlighting the fact that the dramatic increase in suicide deaths among youths routinely reported in literature is not always the case.

It is important to note that several studies have attempted to characterize the different types of suicides among young people but with conflicting results. An early study of non-fatal overdoses by 50 adolescents identified a group of adolescents with chronic behavioral problems who were more likely to express a greater intent to die and who had higher rates of repetition at a 1-year follow-up as compared with their peers who did not have behavioral disturbances [13]. A study of suicides in those less than 15 years old by Beautrais [4] also identified behavioral problems in a group of young people living away from their parents, with relatively low levels of mental illness, high rates of social welfare involvement, severe family difficulties and multiple life changes. Sankey and Lawrence [26] classified the deaths of 187 adolescents aged 12–17 years in New South Wales (Australia) into three groups. The majority (66%) had enduring difficulties at home and school. Behavioral disorders and depression were the most

Table 2 Suicide rates and joinpoint analysis (1970–2002): males/females, and macro-areas of residence (northern/central/southern Italy)

	AAPC (95% CI) 1970–2002	Trend 1		Trend 2		Trend 3	
		Years	APC (95% CI)	Years	APC (95% CI)	Years	APC (95% CI)
Male/female							
Italy							
Male	1.9* (1.3/2.6)	1970–1989	0.8 (−0.3/1.9)	1990–1996	7.9* (2.1/14.0)	1997–2002	−7.9* (−13.4/-2.1)
Female	−1.7* (−2.7/–0.7)	1970–1985	−5.7* (−7.7/-3.6)	1986–2002	2.6* (0.3/5.0)		
Northern Italy							
Male	2.3* (1.5/3.2)	1970–1991	1.1 (−0.0/2.2)	1992–1995	17.3 (−1.9/40.1)	1996–2002	−8.4* (−13.3/−3.3)
Female	−1.2 (−2.5/0.2)	1970–1981	−7.8* (−12.5/−2.8)	1982–2002	2.3 (−0.3/5.0)		
Central Italy							
Male	1.8* (0.8/2.9)	1970–2002	1.8* (0.8/2.9)				
Female	0.2 (−1.7/2.2)	1970–2002	0.2 (−1.7/2.2)				
Southern Italy							
Male	1.6* (0.6/2.6)	1970–1983	−2.3 (−5.8/1.3)	1984–1997	5.4* (1.9/9.0)	1998–2002	−9.4 (−21.5/4.6)
Female	−2.6* (−3.8/−1.5)	1970–1985	−6.4* (−9.1/−3.6)	1986–2002	1.4 (−1.8/4.6)		
Macroares							
Whole sample							
Northern Italy	1.3* (0.5/2.1)	1970–1989	−0.9 (−2.0/0.2)	1990–1995	12.2* (3.8/21.3)	1996–2002	−7.4* (−12.0/-2.5)
Central Italy	1.5* (0.4/2.5)	1970–2002	1.5* (0.4/2.5)				
Southern Italy	0.2 (−0.7/1.0)	1970–1984	−3.8* (−5.9/−1.7)	1985–1997	4.6* (1.7/7.7)	1998–2002	−7.2 (−17.0/3.7)

APC annual percent change, *AAPC* average annual percent change, *95% CI* 95% confidence intervals

* The average annual percent change is significant for $P < 0.05$

Table 3 Distribution of suicides by method and gender, Italian residents aged 15–19 years old, years 1970–1972 and 2000–2002

		Men				Women			
		1970–1972		2000–2002		1970–1972		2000–2002	
		N	%	*N*	%	*N*	%	*N*	%
Hanging	E953	52	31.0	75	47.8	14	10.3	15	26.3
Fire arms	E955	43	25.6	31	19.7	10	7.4	8	14.0
Jumping from a high place	E957	17	10.1	28	17.8	32	23.5	28	49.1
Poisoning by carbon monoxide	E9520–9521	1	0.6	5	3.2	1	0.7	1	1.8
Poisoning by drugs	E9500–9505	15	8.9	0	0	54	39.7	0	0
Poisoning by others substances	E9506–9519; E9528–9529	5	3.0	0	0	2	1.5	0	0
Drowning	E954	13	7.7	2	1.3	15	11.0	0	0
Jumping/lying before moving object	E9580	20	11.9	11	7.0	8	5.9	3	5.3
Cutting and piercing	E956	2	1.2	3	1.9	0	0	1	1.8
Others and late effects of self-inflicted injury		0	0	2	1.3	0	0	1	1.8
Total		168	100.0	157	100.0	136	100.0	57	100.0
Violent methods		147	87.5	150	95.5	79	58.1	55	96.5

common form of mental health problems experienced by this group. Stressful life events accounted for 14% of the deaths and 15% were classified as a result of experimentation, with half of these deaths due to using drugs or alcohol. In a psychological autopsy study of suicide deaths of 19 young people in Belgium [23], the authors identified a subset of young people who had no previous behavioral or emotional difficulties but who completed suicide following the development of an adjustment disorder [22].

A case-control psychological autopsy study by Shaffer et al. [27] examined 120 consecutive suicides (mean age 16 years) in an ethnically diverse area of the United States.

They found that 90% of the youths suffered from at least one DSM-III psychiatric disorder, and 70% suffered from two or more disorders. The most common disorders were mood disorders (61%), disruptive disorders (50%) and substance abuse (35%) disorders. The prevalence of psychiatric diagnoses in the suicides increased with age, except for adjustment disorder, with depressed mood and disruptive disorders more common in the younger male and female suicides, respectively. Substance abuse was found significantly more often in males than in females and was present in about two-thirds of the 18–19-year-old male suicides. Although disruptive disorders were prevalent for both sexes, their effect on risk became statistically insignificant when adjusted for other significant risk factors (previous attempt, mood disorder and substance abuse). Two-thirds of the subjects who committed suicide carried at least one of the three risk factors. For males, a previous suicide attempt, mood disorder, and substance use disorder significantly increased the risk of suicide with an OR of 19.4 (95% CI: 2.3–162.1), 7.8 (95% CI: 2.6–23.2), and 5.8 (95% CI: 1.6–20.6), respectively. For females, having made a previous attempt and having a mood disorder (OR: 20.8, 95% CI: 1.4–320) were identified as significant risk factors. Subjects who committed suicide were significantly more likely to have received psychiatric treatment in the 3 months prior to their death, but fewer than 10% had been treated with antidepressants or had treatment for substance abuse.

Brent et al. [5] conducted a study of 140 consecutive suicides aged 13–19 and found similar significant psychopathological risk factors. In addition, in age-stratified, case-control comparisons, they found that the presence of any psychiatric disorder resulted in a much greater risk for suicide in the older (16–19 years) rather than in the younger adolescents (13–15 years). Parent-child conflict was more frequent and resulted in a higher risk for suicide among the younger adolescents (13–15 years). Other particularly significant risk factors cited for the younger age group were mood disorder, the presence of a firearm in the home, and a previous suicide attempt. A lifetime history of physical abuse conferred an immensely increased risk for suicide with odds ratios as high as 49.3 (95% CI: 6.4–377.3) for males. Other risk factors for males that reached statistical significance were psychopathology in a first-degree relative, conflict with parents, conflict in a romantic relationship, loss of a romantic relationship, living in a non-intact family, legal or disciplinary problems, and a firearm in the home. For girls, loss of romantic relationship, legal or disciplinary problems, physical abuse, and a firearm in the home were statistically significant risk factors for completed suicide.

The present study was merely a numerical report of deaths by suicide in Italy in the period 1970–2000. It does not report features that are routinely involved in psychological autopsy studies such as psychiatric disorders, substance abuse, previous suicide attempts, to name just a few. Also, although negative attitudes toward suicide by the Christian Church have diminished over the past decade, stigmatization toward suicide remains a major issue, leading to many difficulties for the prevention and proper evaluation of the phenomenon. The underreporting of suicide remains one of these major problems. However, the present study has important implications for understanding suicidal behavior in adolescents, such as the changes in methods used by boys and girls and sex differences over time.

Despite research on suicide among youths, little is known about the interplay of factors that precipitate completed suicide. Each suicide represents a lost life, lost talents, lost creativity, lost contributions made to society, and a lost son or daughter. Suicide is the result of a complex interaction of causal factors, including mental illness, poverty, substance abuse, social isolation, losses, relational difficulties and school problems. Caretakers should pay particular attention to these features, including poor academic achievement, social isolation, failure to complete high school, self-medication with drugs or alcohol, promiscuity, involvement in the criminal justice system, lack of vocational success, inability to live independently, health problems, and suicidal ideation.

Suicide can be prevented. Parents can play a major role in facilitating talk about the issue of psychological pain and suicide, but schools should also be a place where parents, teachers and others involved in the health and education of children should build effective suicide preventive strategies for adolescents.

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